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Epidemiologic Notes and Reports

Lead Ingestion Associated with Ceramic Glaze — Alaska, 1992

In August 1992, a physician notified the Alaska Division of Public Health (ADPH) that three patients at a psychiatric hospital had consumed ceramic glaze during ceramic therapy (i.e., recreation therapy involving the production of ceramic ware), and two of these patients had elevated blood lead levels (BLLs). This report summarizes the ADPH's investigation of these ingestions.

Case Investigations

Patient 1. On August 18, an 11-year-old patient, admitted for conduct disorder, consumed approximately 2 fluid ounces of ceramic glaze. The patient was taken immediately to the emergency room of a nearby hospital and was treated by gastric lavage and activated charcoal administered by mouth. Because ceramic glaze can contain lead, a blood sample was obtained to be tested for lead and zinc protoporphyrin (ZPP) levels. The BLL obtained approximately 1 hour after ingestion of the glaze was 163 µg/dL; ZPP level was 25 µg/dL (normal: <35 µg/dL). However, the BLL was not known until August 21. Repeat tests for BLL on August 21 and 28 and September 9 were 61 µg/dL, 45 µg/dL, and 35 µg/dL, respectively. Chelation therapy was not given, and the patient remained asymptomatic.

Patient 2. On August 18, a 13-year-old patient, admitted for conduct disorder and depression, consumed a small amount of liquid ceramic glaze. A BLL obtained approximately 1 hour after ingestion of the glaze was <5 µg/dL; ZPP was 54 µg/dL. A repeat BLL on August 21 was <5µg/dL.

Patient 3. On August 15, a 58-year-old patient, admitted for psychosis with suicidal ideation, consumed approximately 4 fluid ounces of ceramic glaze. The next day, the patient complained of abdominal pain. A BLL obtained on September 1 was 61 µg/dL; ZPP was 105 µg/dL. No treatment was given, and the patient had no additional gastrointestinal symptoms.

Follow-up Investigation

The glazes consumed by patients 1 and 3 were 25%–29% and 43% lead by weight, respectively. Soluble lead accounted for up to 32% of the total weight of both of these

Lead Ingestion — Continued

glazes. The glaze consumed by patient 2 was <0.06% lead by weight and was considered "lead-free."

At the time of these episodes, two large psychiatric facilities in Alaska offered ceramic-therapy programs that used lead-based glaze. Approximately 1400 patients participated in ceramic-therapy programs at these two facilities. In addition, of 15 nursing homes in Alaska contacted by the ADPH, four had used lead-based glaze in ceramic therapy. Following these ingestions, the ADPH requested that psychiatric facilities and nursing homes discontinue use of lead-based glaze in ceramic therapy.

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Editorial Note: During 1991, the American Association of Poison Control Centers received reports of 318 incidents of ceramic glaze ingestion in the United States (*1*), of which nine (2.8%) were intentional; 307 (96.5%), unintentional; and two (0.6%), of unknown intent. From 1984 through 1990, the Fresno County (California) Regional Poison Control Center received reports of 75 persons who ingested lead-based ceramic glaze (*2*); of these, 34 (45.3%) occurred in extended-care facilities and for 32 (42.7%) persons, impaired mental status was known before ingestion. Nursing home patients who developed lead poisoning after ingesting lead-based glaze while participating in ceramic therapy include four persons (one of whom died of lead encephalopathy) in Pennsylvania (R. Roberge, University of Pittsburgh Medical Center, personal communication, September 24, 1992) and one person in Maryland (P. McLaine, Division of Lead Poisoning Prevention, Maryland Department of the Environment, Baltimore, personal communication, September 30, 1992). In 1988, following a series of lead poisonings among patients who ingested ceramic glaze, Arizona banned the use of lead-based glaze in nursing homes (*3*).

Since 1990, all arts and crafts products sold in the United States are required to be labeled in conformance with Standard D-4236 of the American Society for Testing and Materials (ASTM).* Under this standard, toxic products, including lead-based glazes, must be marked with a signal word such as "warning" or "caution," a list of ingredients, instructions for safe use of the product, and a statement that the product is inappropriate for use by children. Additional labeling such as "safe for food containers" or "food-safe" indicates that lead from a correctly fired piece of pottery will not leach; unfired glaze, however, may contain lead that can be absorbed if ingested.

In 1987, the Art and Craft Materials Institute (ACMI), a nonprofit association that sponsors a certification program of arts and crafts products to document conformance with labeling laws, informed nursing homes and occupational therapists nationally of the hazards associated with using toxic materials in institutional settings. ACMI recommends that in situations where supervision is required (e.g., elementary schools, hospitals, nursing homes, and psychiatric institutions) only "lead-free" glaze be used (*4*). ACMI also supports additional product labeling that specifically cautions against the use of toxic materials in these facilities. Glazes distributed after 1990 that are labeled "conforms to ASTM D-4236" and have no health warnings are considered nontoxic.

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*Amendment to the Federal Hazardous Substances Act (Public Law 100-695).

Lead Ingestion – Continued

References
1. Litovitz TL, Holm KC, Baily KM, Schmitz BF. 1991 Annual report of the American Association of Poison Control Centers National Data Collection System. Am J Emerg Med 1992;10:452–91.
2. Roblez JG, Ekins BR. Acute ingestion of ceramic glazes containing lead [Abstract]. In: Program and abstracts of the AAPCC/AACT/ABMT/CAPCC annual scientific meeting, 1990. Tucson, Arizona: American Association of Poison Control Centers, 1990:94.
3. Vance MV, Curry SC, Bradley JM, Kunkel DB, Gerkin RD, Bond GR. Acute lead poisoning in nursing home and psychiatric patients from the ingestion of lead-based ceramic glazes. Arch Intern Med 1990;150:2085–92.
4. American Art and Craft Materials Institute. What you need to know about the safety of art and craft materials. Boston: American Art and Craft Materials Institute Inc, 1992.

Effectiveness in Disease and Injury Prevention

Public Health Focus: Surveillance, Prevention, and Control of Nosocomial Infections

Nosocomial infections are estimated to involve more than 2 million patients annually (*1,2*) and in 1992 cost more than $4.5 billion (*3*). Adverse consequences of nosocomial infections and their associated costs vary by type of infection (Table 1) (*3*). Hospital-based programs of surveillance, prevention, and control of nosocomial infections were developed during the 1950s and refined in the United States during the 1960s and 1970s. However, questions regarding the efficacy and cost-effectiveness of these programs have persisted. This report examines knowledge about the effectiveness of nosocomial infection surveillance, prevention, and control and their cost-benefits.

TABLE 1. Estimated average number of extra days, average amount of extra charges per infection, and deaths caused by and contributed to by nosocomial infections — United States*

Type	Extra days	Extra charges†	Deaths directly caused by infections		Deaths to which infections contributed	
			Total	(%)	Total	(%)
Surgical wound infection	7.3	$3,152	3,251	(0.6)	9,726	(1.9)
Lower respiratory tract infection	5.9	$5,683	7,087	(3.1)	22,983	(10.1)
Bloodstream infection	7.4	$3,517	4,496	(4.4)	8,844	(8.6)
Urinary tract infection	1.0	$ 680	947	(0.1)	6,503	(0.7)
Other types	4.8	$1,617	3,246	(0.8)	10,036	(2.5)
All types§	**4.0**	**$2,100**	**19,027**	**(0.9)**	**58,092**	**(2.7)**

* *Reference 3.*
† 1992 dollars.
§ Some infections were weighted differently in computing these averages (*3*).

Nosocomial Infections — Continued

Efficacy/Effectiveness

During the 1960s, U.S. hospitals organized infection-control programs to conduct surveillance, develop control measures, and develop and implement infection-control policies. In 1976, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) added to its standards for accreditation the presence of an infection surveillance and control program in accredited hospitals.

In the early 1970s, CDC initiated the Study on the Efficacy of Nosocomial Infection Control Project (SENIC) to examine the effectiveness of nosocomial infection surveillance and control programs in the United States (*2*). Objectives of SENIC were to 1) measure the extent to which newly developing infection-control programs had been adopted in U.S. hospitals and 2) determine whether and to what extent these program had reduced nosocomial infection rates. SENIC methodology included a survey in 1976 of all U.S. hospitals to determine specific surveillance and control characteristics of their infection-control programs and, in 1975–1976, review of more than 339,000 patient medical records in 338 randomly selected U.S. hospitals to determine the presence of nosocomial infections (*4*).

SENIC found that hospitals reduced their nosocomial infection rates by approximately 32% if their infection surveillance and control program included four components: 1) appropriate emphases on surveillance activities **and** vigorous control efforts, 2) at least one full-time infection-control practitioner per 250 beds, 3) a trained hospital epidemiologist, and 4) for surgical wound infections (SWIs), feedback of wound infection rates to practicing surgeons (*2*). However, the components needed for prevention varied for the four major types of nosocomial infection (i.e., SWI, urinary tract infection, bloodstream infection, and lower respiratory tract infection) (Table 2) (*5,6*).

As the only controlled study of the effectiveness of infection surveillance and control programs, SENIC provided the basis for an infection-control strategy employing epidemiology (*7*). However, in the mid-1970s, only 0.2% of U.S. hospitals had programs that were effective in reducing all four major types of infections. Although approximately one third of nosocomial infections in the U.S. hospitals could have been prevented, in 1976 approximately 6% of all such infections were actually being prevented (*8*). In 1983, another survey of infection surveillance and control programs in a random sample of U.S. hospitals found that hospitals had substantially increased the intensity of their surveillance and control activities. However, the failure to implement certain critical components (e.g., an adequate staffing ratio for infection-control practitioners, a trained physician epidemiologist, or reports of wound infection rates to surgeons) had limited the maximum potential for improvement in prevention (at that time, such programs were capable of preventing an estimated 9% of infections) (*9*).

Cost-Effectiveness and Cost-Benefit

The publication of the findings of SENIC established the effectiveness of infection-control programs. However, other concerns regarding the cost-effectiveness and cost-benefit of such programs have emerged as the methods of reimbursement for U.S. hospitals have changed (*10*).

Complete cost-benefit analyses provide estimates of all costs of nosocomial infection that are saved by effective programs, including physicians' fees and costs to the

Nosocomial Infections – Continued

patient for time off work. In addition, computation of these costs should include salary and overhead of the infection-control staff and the cost of patient-care practices (e.g., handwashing costs) to prevent cross-infection.

Based on these considerations, the cost of an infection-control program (in 1985 dollars) has been estimated to be $60,000 per 250 beds, projecting to all U.S. hospitals a cost of $243 million (*6*). To estimate the potential benefits from prevention nationwide, the costs of nosocomial infections (in 1985 dollars) were estimated to be approximately $4 billion. Using these estimates, the costs of having an infection-control program would equal the amount saved by preventing hospital infections when approximately 6% of the infections are prevented (*6,11*). If the percentage of the infections prevented were greater than 6%, then a net savings to the hospital would occur. Under the prospective payment system, virtually the entire cost of nosocomial

TABLE 2. Percentage of nosocomial infections prevented by the most effective infection surveillance and control programs* — United States, Study on the Efficacy of Nosocomial Infection Control Project, 1970 and 1975–1976

Type of infection	Components of most effective programs	% Prevented†
Surgical wound infection (SWI)	An organized hospitalwide program with intensive surveillance and control including reporting SWI rates to surgeons	20
	plus	
	A trained hospital epidemiologist	35
Urinary tract infection	An organized hospitalwide program with intensive surveillance in operation for at least 1 year; an infection-control practitioner (ICP) per 250 beds	38
Primary bloodstream infection	An organized hospitalwide program with intensive control component	15
	plus	
	A program with moderately intensive surveillance in operation for at least 1 year; an ICP per 250 beds; an infection-control physician or microbiologist	35
Lower respiratory tract infection		
Postoperative	An organized hospitalwide program with intensive surveillance; an ICP per 250 beds	27
In medical patients	An organized hospitalwide program with intensive surveillance and control	13
All types	An organized hospitalwide program with intensive surveillance and control with all the components listed above	32

* *Reference 5.*
† Estimate of preventable fraction (*6*).

Nosocomial Infections — Continued

infections represents an operating deficit. Effective infection surveillance and control programs are the only way to reduce that cost (*6*).

Even though methodologies to measure cost-benefit of infection surveillance and control programs have varied, all available studies have shown a benefit to the hospitals (*6*).

Reported by: Hospital Infections Program, National Center for Infectious Diseases, CDC.

Editorial Note: Prevention of nosocomial infections remains a major objective of U.S. hospitals and of other health-care and professional organizations such as JCAHO, the American Hospital Association (AHA), the Association for Practitioners in Infection Control, the Society for Hospital Epidemiology of America (SHEA), the Surgical Infection Society, and the Public Health Service (*12,13*). Despite some of its limitations, findings from SENIC have enhanced the practice of infection control in the United States by providing a scientific basis for determining the effectiveness of infection surveillance and control programs; this basis may be unique among programs addressing complications of hospitalization.

The findings of SENIC have also suggested the need for physician training in infection control. As a result, SHEA, AHA, and CDC have provided a training course in hospital epidemiology for physicians.* In addition, the results of SENIC affirmed interest in surveillance of nosocomial infections and demonstrated the importance of using selected outcome measures (e.g., nosocomial infection rates) from targeted surveillance.

To better meet the need for outcome measures from targeted surveillance, CDC's National Nosocomial Infection Surveillance (NNIS) System—the only source of national data on the epidemiology of nosocomial infections in the United States—revised its methodology in 1986 (*14–16*). The use of risk-adjusted infection rates and feedback of the distributions of these rates to the NNIS hospitals have helped refine outcome measures that will provide more meaningful rates for interhospital comparison (*14*). The Institute of Medicine recently recommended expanding the role of the NNIS system in refining outcome measures (*17*). JCAHO has adapted the NNIS methods and is beginning to collect information on a wide range of clinical indicators in infection control; seven of these indicators are outcome measures (*13*). During the 1990s, infection surveillance and control programs will continue to evolve and, with progressive computerization in hospitals, these programs will emphasize the role of outcome measurement for quality improvement and disease prevention.

References

1. Haley RW, Culver DH, White JW, Morgan WM, Emori TG. The nationwide nosocomial infection rate: a new need for vital statistics. Am J Epidemiol 1985;121:159–67.
2. Haley RW, Culver DH, White JW, et al. The efficacy of infection surveillance and control programs in preventing nosocomial infections in U.S. hospitals. Am J Epidemiol 1985;121:182–205.
3. Martone WJ, Jarvis WR, Culver DH, Haley RW. Incidence and nature of endemic and epidemic nosocomial infections. In: Bennett JV, Brachman PS, eds. Hospital infections. Boston: Little, Brown, and Company, 1992;577–96.
4. Haley RW, Quade D, Freeman HE, Bennett JV, CDC SENIC Planning Committee. Study on the efficacy of nosocomial infection control (SENIC Project): summary of study design. Am J Epidemiol 1980;111:472.

*Course information is available from Gina Pugliese, AHA, 840 North Lake Shore Drive, Chicago, IL 60611; telephone (312) 280-6404; fax (312) 280-6228.

Nosocomial Infections – Continued

5. Haley RW. The development of infection surveillance and control programs. In: Bennett JV, Brachman PS, eds. Hospital infections. Boston: Little, Brown, and Company, 1992:63–78.
6. Haley RW. Managing hospital infection control for cost-effectiveness. Chicago: American Hospital Association, 1986.
7. Goldmann DA. Nosocomial infection control in the United States of America. J Hosp Infect 1986;8:116–9.
8. Haley RW, White JW, Culver DH, Hughes JM. The financial incentive for hospitals to prevent nosocomial infections under the prospective payment system. JAMA 1987;257:1611–4.
9. Haley RW, Morgan WM, Culver DH, et al. Hospital infection control: recent progress and opportunities under prospective payment. Am J Infect Control 1985;13:97–105.
10. Inglehart JK. The new era of prospective payment for hospitals. New Engl J Med 1982;307:1288-1291.
11. Haley RW. Preliminary cost-benefit analysis of hospital infection control programs (the SENIC Project). In: Daschner F. Proven and unproven methods in hospital infection control: proceedings of an international workshop at Baiersbronn, September 24–25, 1977. New York: Gustav Fischer Verlag 1978:93–5.
12. Joint Commission on Accreditation of Hospitals. The Joint Commissions' agenda for change. Oakbrook Terrace, Illinois: Joint Commission on Accreditation of Hospitals, 1986.
13. Public Health Service. Healthy people 2000: national health promotion and disease prevention objectives. Washington, DC: US Department of Health and Human Services, Public Health Service, 1991; DHHS publication no. (PHS)91-50213.
14. Emori TG, Culver DH, Horan TC, et al. National Nosocomial Infections Surveillance System (NNIS): description of surveillance methodology. Am J Infect Control 1991;19:19–35.
15. Garner JS, Jarvis WR, Emori TG, Horan TC, Hughes JM. CDC definitions for nosocomial infections, 1988. Am J Infect Control 1988;16:128–40.
16. National Nosocomial Infections Surveillance System. Nosocomial infection rates for interhospital comparison: limitations and possible solutions. Infect Control Hosp Epidemiol 1991;12:609–12.
17. Lederberg J, Shope RE, eds. Emerging infections: microbial threats to health in the United States. Washington, DC: National Academy Press, 1992.

Current Trends

Plague — United States, 1992

From January 1 through October 15, 1992, 11 human plague cases, including one described recently (*1*), have been reported in the United States. This report summarizes the epidemiologic information on these cases and provides recommendations for control of plague.

Three of the 11 cases occurred among young children (aged ≤6 years); eight occurred among adolescents and adults (Table 1). Ten cases occurred among males. Four of the cases occurred among American Indians (three among Navajo and one in a Paiute Indian). Four cases were reported from Arizona, three from New Mexico, and one each from California, Idaho, Nevada, and Utah. Fleas were implicated as the source of infection in seven cases, domestic cats in two, and a wild rodent carcass in one; the source of one case was undetermined. In six cases, the infective exposure probably occurred near the patient's residence. All but one patient recovered with antibiotic treatment.

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TABLE 1. Characteristics of human plague cases — United States, J

Date of onset	Sex/ Age (yrs)	Probable location of exposure	State of residence	Clinical present
Apr. 24	Male/16	Douglas County, Nevada	Nevada	Bubonic, septic
May 6	Male/39	Santa Fe County, New Mexico	New Mexico	Bubonic, septic
July 10	Male/16	Utah County, Utah	Utah	Bubonic, septic
July 13	Male/28	San Miguel County, New Mexico	New Mexico	Bubonic, septic
July 17	Male/68	Apache County, Arizona	Arizona	Bubonic, septic
Aug. 1	Female/2	Apache County, Arizona	Arizona	Bubonic, septic
Aug. 1	Male/6	Owyhee County, Idaho	Idaho	Bubonic, septic
Aug. 3	Male/14	Apache County, Arizona	Arizona	Bubonic, septic
Aug. 6	Male/6	Madera County, California	California	Bubonic
Aug. 23	Male/31	Chaffee County, Colorado	Arizona	Pneumonic (fat
Sept. 28	Male/39	Torrance County, New Mexico	New Mexico	Bubonic, septic

Plague — Continued

tes, January 1–October 15, 1992

esentation	Laboratory results	Probable source of infection
epticemic	Positive blood culture	Skinned and consumed Belding's ground squirrel (*Spermophilus beldingi*) during camping trip
epticemic	Positive blood culture, positive bubo aspirate	Bite of fleas from stray dog
epticemic	Positive blood culture	Unknown
epticemic	Positive blood culture, positive bubo aspirate	Bite from a domestic cat
epticemic	Positive blood culture, positive sputum culture	Flea bite near home (prairie dog habitat) or where he was wood-cutting (wood rat habitat)
epticemic	Positive blood culture, positive bubo aspirate	Flea bite near residence
epticemic	Positive blood culture	Flea bite near residence
epticemic	Positive blood culture, positive bubo aspirate	Flea bite near home or field
	Positive bubo aspirate	Flea bite while camping in the Sierra Nevada Mountains
ic (fatal)	Positive sputum culture	Infective aerosol from sick cat
epticemic	Positive blood culture	Flea bite while loading wood from woodlot

Plague – Continued

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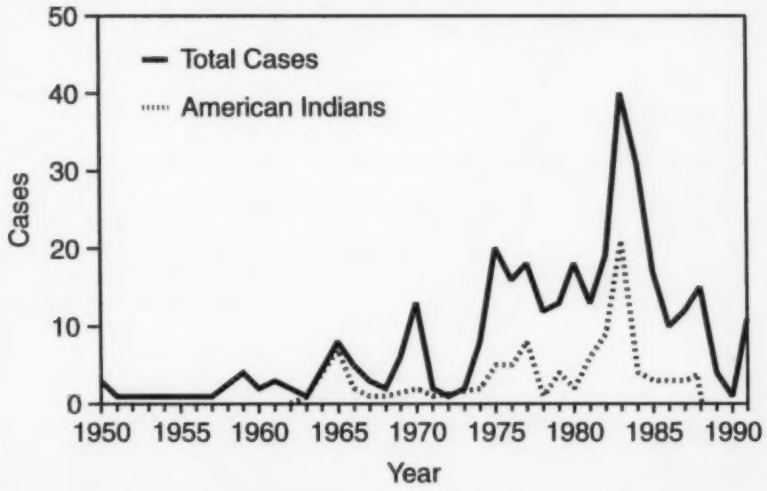
Editorial Note: From 1950 through 1991, 336 cases of plague were reported in the United States (Figure 1) (*2;* CDC, unpublished data, 1991); more than half (194 [58%]) of these have occurred since 1980. *Yersinia pestis*, the etiologic agent of plague, is maintained in the western United States as an enzootic infection of rodents and their fleas (*3,4*). Humans become infected through contact with infected animals or fleas, usually during epizootics among rodent species (*3*). Although human plague cases were reported in 13 western states during 1950–1991, Arizona (14%), California (10%), Colorado (10%), and New Mexico (56%) reported 302 (90%) of the cases, and 97 (29%) were among American Indians. The Navajo composed 77 (23%) of the total cases and 79% of the cases among American Indians (*5*). The Paiute case-patient is the first reported among this tribe and the first human plague case reported in northeastern Nevada/southwestern Idaho.

American Indians are disproportionately represented among plague cases in the United States, possibly because they frequently reside in rural areas where plague is enzootic among rodents. Because prairie dogs (*Cynomys* spp.) are abundant and extremely susceptible to plague, they are a major amplifying host throughout the Southwest, including the Navajo Nation (*3–5*). Epizootics also frequently involve rock squirrels (*Spermophilus variegatus*), usually in conjunction with prairie dog epizootics. Rock squirrels have a predilection for habitats created by human activity and often live in peridomestic sites (e.g., abandoned cars, rock walls, and mobile-home founda-

FIGURE 1. Reported human plague cases — United States, 1950–1991



Plague — Continued

tions). Other reasons for the high proportion of plague cases among the Navajo include traditional involvement in pastoral activities such as sheep-herding, which place Navajos in close contact with rodent habitat; killing of prairie dogs for consumption by humans and by domestic animals; and ownership of free-roaming dogs and cats.

The cyclical pattern of plague cases in humans probably reflects the secular trend of plague epizootics in rodents (*3*). Epizootics among ground squirrels and prairie dogs cause major reductions in the populations of these animals, such as the depopulation following the large southwestern epizootic that occurred during 1983–1985 (CDC, unpublished data, 1991). The recent recovery of these rodent populations (CDC, unpublished data, 1991) suggests that increased risk for human cases will persist into 1993 and beyond.

Plague surveillance and control in enzootic areas should include 1) monitoring die-offs in rodent populations using the public to report sightings of dead animals and reductions in colony size; 2) educating the medical and veterinary communities concerning the manifestations and diagnosis of plague—including the pneumonic syndrome (*1*)—and procedures for reporting suspected cases; 3) systematic monitoring of rodent plague activity in populated areas by public health personnel, and controlling fleas in areas of rodent epizootics near places of human activity; and 4) educating the public about the role of domestic animals, such as cats and dogs, in zoonotic transmission of the disease, including information about control of fleas on pets and confinement of pets.

References

1. CDC. Pneumonic plague—Arizona, 1992. MMWR 1992;41:737–9.
2. CDC. Summary of notifiable diseases, United States, 1990. MMWR 1990;39(no. 53):3.
3. Barnes AM. Surveillance and control of bubonic plague in the United States. Symp Zool Soc Lond 1982;50:237–70.
4. Barnes AM. Plague in the U.S.: present and future. In: LR Davis, RE Marsh, eds. Proceedings of the Vertebrate Pest Conference. Davis, California: University of California–Davis, 1990:43–6.
5. Barnes AM, Quan TJ, Beard ML, Maupin GO. Plague in American Indians, 1956–1987. In: CDC surveillance summaries (July 1988). MMWR 1988;37(no. SS-3):11–6.

Epidemiologic Notes and Reports

Epidemic Early Syphilis — Montgomery County, Alabama, 1990–1991

In Montgomery County (1990 population: 209,085), Alabama, an epidemic of early syphilis (ES) (i.e., primary, secondary, and early latent) involving 1010 cases occurred from August 1990 through November 1991 (Figure 1). From June 17 through November 7, 1991, the Alabama Department of Public Health (ADPH) and CDC initiated an intervention campaign to reduce the incidence of ES; the intervention increased case-finding primarily through partner notification (PN) and cluster investigations.* This report assesses the intervention campaign by describing 1) the results of PN/cluster investigation interviews during the intervention, 2) the relation between reported

*Cluster investigations are designed to identify persons (other than sex partners) at high risk for syphilis. In this report, persons identified through cluster investigations are referred to as high-risk associates.

Syphilis – Continued

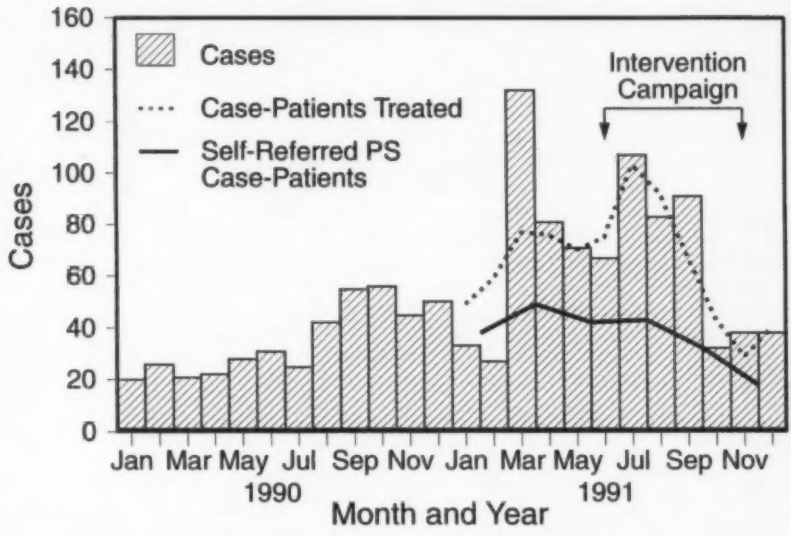
crack cocaine use and PN/cluster investigation results, 3) a comparison of interview results for the first 6 weeks of the campaign (i.e., early campaign period) with the 6-week period immediately before the campaign (i.e., precampaign period), and 4) the syphilis morbidity trends for 1990 and 1991.

To conduct this campaign, the ADPH increased from 45 to 71 the weekly number of hours the county sexually transmitted disease (STD) clinic was open, increased from eight to 22 the number of public health workers assigned to syphilis intervention, provided supplemental training in PN/cluster investigation techniques, and intensified supervision throughout the intervention period. To enhance analysis of trends in syphilis incidence, trends for only those case-patients who self-referred with primary and secondary syphilis were analyzed.

PN/Cluster Investigation Interview Results

During the intervention campaign, 373 case-patients were interviewed and provided sufficient information to initiate efforts to locate 984 sex partners.† Of these, 696 (71%) were examined: 113 (11%) had syphilis and were treated, and 547 (56%)

FIGURE 1. Number of syphilis cases by month of report (1990–1991), and by treatment month (1991)* and number of self-referred primary and secondary syphilis (PS) cases, reported bimonthly (1991)* — Montgomery County, Alabama



*Data available for 1991 only.

† An additional 240 sex partners were identified who had already been evaluated by the ADPH; no additional efforts were made to locate and evaluate these persons.

Syphilis — Continued

were given prophylactic antibiotic treatment. In addition, case-patients provided information to initiate efforts to locate 1446 high-risk associates.[§] Of these, 1153 (80%) were examined: 41 (3%) had syphilis and were treated, and 836 (58%) were treated prophylactically.

The 116 (31%) case-patients who identified at least one infected sex partner or high-risk associate could not be distinguished from the remaining case-patients by demographics, disease stage, or manner in which the case-patients were detected.

Relation Between Crack Cocaine Use and PN/Cluster Investigation Results

Information about risk behaviors was provided by 352 (94%) of the 373 case-patients. Of the 198 males, 40 (20%) reported crack cocaine use. Exchanging sex for drugs was more likely to be reported by those who reported crack cocaine use (seven [18%] of 40) than by those who did not (nine [6%] of 158) (prevalence ratio [PR]=3.1; 95% confidence interval [CI]=1.2–7.8). Of the 154 females, 32 (21%) reported crack cocaine use. Exchanging sex either for drugs or money was more likely to be reported by those who reported crack cocaine use (24 [75%] of 32) than by those who did not (six [5%] of 122) (PR=15.3; 95% CI=6.8–34.1).

Compared with nonusers, crack cocaine users reported, on average, nearly twice as many sex partners per case (8.4 versus 4.7 [$p<0.01$]) during the interview period[¶] but more than three times as many sex partners per case for whom interviews yielded insufficient information to initiate PN/cluster investigations (4.8 versus 1.5 [$p<0.01$]). Although more PN/cluster investigations were initiated for crack cocaine users than for nonusers per case (6.5 versus 6.0), these investigations found 28% fewer infected persons (0.31 versus 0.43 per case), and 14% fewer persons (3.2 versus 3.7) who received prophylactic antibiotic treatment.

Comparison of Early Campaign Period with Precampaign Period Interview Results

Compared with the precampaign period, the number of new ES cases identified through PN/cluster investigations increased during the early campaign period by 165% (from 23 to 61); the number identified through screening, 79% (from 24 to 43); and the number identified through self-referral, 52% (from 31 to 47). Overall, the number of new case-patients interviewed increased 94% (from 78 to 151). These 151 early campaign period case-patients provided sufficient information to initiate efforts to locate on average 6.8 previously unevaluated sex partners and high-risk associates per case-patient; while the 78 precampaign case-patients provided sufficient information to initiate efforts to locate on average 4.6 previously unevaluated sex partners and high-risk associates per case-patient.

[§] An additional 731 high-risk associates were identified who had already been evaluated by the ADPH; no additional efforts were made to locate and evaluate these persons.

[¶] Defined as the interval during which sexual contact may have resulted in transmission of syphilis. For primary stage syphilis, the interview period is 3 months plus the duration of disease symptoms; for secondary, 6 months plus duration of disease symptoms; and for early latent, 1 year.

Syphilis – Continued

Comparing the early campaign with the precampaign period, the average number of infected persons per case was similar (0.48 versus 0.37 [p=0.66]); however, the average number of persons prophylactically treated per case was greater (3.9 versus 2.5 [p<0.01]). Most of the differences in PN/cluster investigation productivity between the early campaign and precampaign periods reflected the substantial increase in the number of high-risk associates identified during the early campaign period.

Syphilis Morbidity Trends for 1990–1991

During 1990, the number of ES cases ranged from 20 to 56 cases per month (Figure 1). In comparison, during February–March 1991, cases increased from 27 to 132 per month before declining during October–December. By month of treatment (data available for 1991 only), the number of ES cases peaked in July before declining by December. Reported bimonthly, the number of self-referred primary and secondary syphilis case-patients (data available for 1991 only) increased from 38 during January/February to 49 during March/April and gradually declined to 18 during November/December.

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Editorial Note: The goals of syphilis-prevention programs are to interrupt sexual transmission; prevent fetal loss and congenital syphilis (CS) and its complications; and prevent late complications in adults. Early detection, treatment of persons known to be infected, and prophylactic antibiotic treatment of those likely to be infected are methods to interrupt sexual transmission and prevent transmission from mother to unborn child. Case-finding can be enhanced through screening, PN/cluster investigation, or increased self-referrals as a result of education and/or reduced barriers to health care.

Previous reports have suggested that interventions emphasizing PN in cocaine-related STD outbreaks are inadequate because cocaine users do not provide sufficient information to enable public health workers to locate their sex partners (*1,2*). However, in Montgomery County, public health workers were able to combine PN and cluster investigation techniques to increase identification of infected and potentially infected sex partners and high-risk associates of syphilis case-patients by increasing STD clinic hours and personnel, providing supplemental training, and intensifying supervision.

In particular, use of cluster investigations emphasized identification of high-risk associates (who would have otherwise gone undetected and unexamined) and thereby substantially increased the number of persons who received prophylactic antibiotic treatment. However, the impact of prophylactic treatment in any STD outbreak is difficult to evaluate because the proportion of persons at increased risk (i.e., high-risk associates) that actually have incubating syphilis is not estimable; the impact can be estimated for persons with known exposure to syphilis (i.e., sex partners).

PN/cluster investigation efforts may be more efficient when directed toward groups that yield greater numbers of infected persons; identifying characteristics (e.g., demographics) of these targeted groups is critical. During this outbreak, however, because characteristics of syphilis case-patients who had infected sex partners or high-risk associates were similar to those who did not, no target group was identified.

Syphilis — Continued

With this intervention campaign, incidence of syphilis, as measured by self-referred primary and secondary cases, declined 63% (from 49 cases during March/April to 18 cases during November/December), although the decline appears to have begun before the intervention was initiated. Use of both PN and cluster investigations, as well as additional personnel who receive supplemental training in PN/cluster investigation techniques and intensified supervision, should be considered in intervention campaigns for other syphilis outbreaks. Continued evaluation of these methods, including monitoring trends among self-referred primary and secondary case-patients, will be crucial to determine their effectiveness in stemming syphilis outbreaks.

References

1. Andrus JK, Fleming DW, Harger DR, et al. Partner notification: can it control epidemic syphilis? Ann Intern Med 1990;112:539–43.
2. Rolfs RT, Goldberg M, Sharrar RG. Risk factors for syphilis: cocaine use and prostitution. Am J Public Health 1990;80:853–7.

Human Psittacosis Linked to a Bird Distributor in Mississippi — Massachusetts and Tennessee, 1992

During April–May 1992, CDC was notified of a possible outbreak of psittacosis involving members of two families in Massachusetts and Tennessee who had recently purchased birds as pets. In the subsequent investigation of this problem, human psittacosis was defined as a fourfold rise in complement-fixing antibody titer to ≥32 or a single titer of ≥32 in a patient with fever and/or respiratory symptoms. This report summarizes the investigation of this problem.

Massachusetts

On March 1, a 34-year-old man was hospitalized with radiographically confirmed lobar pneumonia following 2 days of fever, malaise, and sore throat. A presumptive diagnosis of psittacosis was made; he was treated with tetracycline and recovered. Also on March 1, the patient's wife and their 5-year-old child developed mucopurulent conjunctivitis—presumed to be caused by *Chlamydia psittaci*—that responded to doxycycline and oral and topical erythromycin, respectively. Convalescent serum samples obtained from the man on March 16 and June 4 revealed titers of 64 and 32 against psittacosis, respectively.

The man had purchased a parakeet from a local pet store on February 17; on February 27 the parakeet became lethargic. On March 4, the parakeet was euthanized by a local veterinarian and sent to the U.S. Department of Agriculture (USDA) National Veterinary Services Laboratory, which isolated *C. psittaci* from a cloacal swab.

Tennessee

During March 1–April 8, six members of a family (age range: 20–61 years) had onset of fever (five family members), anorexia (four), sore throat (three), cough (two), headache (two), vomiting (two), and myalgias (two). Medical evaluation of three of the patients included chest radiographs; in all three, diffuse interstitial pulmonary infiltrates were present. A presumptive diagnosis of psittacosis was made. Two persons required hospitalization. All six persons improved after therapy with doxycycline (five)

Psittacosis – Continued

or erythromycin (one). On May 7–8, blood samples were obtained from all six family members; psittacosis was diagnosed serologically in two persons.

The family had purchased a lutino cockatiel from a local pet store on February 17 and noted that the bird was irritable. The bird was euthanized by a local veterinarian in early April, and hepatosplenomegaly was detected on necropsy. Chlamydial antigen was detected by enzyme-linked immunosorbent assay from both cloacal and throat swabs, but cultures for *C. psittaci* were not obtained.

Follow-up Investigation

The pet birds in both of these reports were traced to a distributor in Mississippi. Although the distributor shipped birds of both species to each of the associated pet stores in Massachusetts and Tennessee on February 13, the stores were unable to determine the exact shipment date of the infected birds.

On June 24, the Mississippi State Department of Health and USDA inspected the premises of the bird distributor and detected few (<1%) ill birds among the approximately 3000 in stock. The distributor reported that nestlings supplied by domestic breeders and imported birds received from quarantine typically were held at the facility for a maximum of 1 week before being shipped to retailers throughout the United States. Birds are given chlortetracycline hydrochloride (CTC)-treated water while at the facility. The distributor received parakeets from four domestic breeders and cockatiels from seven other domestic breeders. However, neither the parakeet nor cockatiel in this report could be traced to specific breeders.

To achieve higher serum levels of CTC in birds, the bird distributor was advised to feed all birds only CTC-impregnated feed and to notify customers of the need to maintain all shipped birds on CTC-treated feed for 45 days. Since May 1992, no additional cases of psittacosis associated with birds supplied by this distributor have been reported.

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Editorial Note: Human psittacosis is a notifiable disease in 42 states (*1*), and approximately 100–250 cases are reported to CDC each year (*2*). However, this problem may occur more often than reflected by reported cases because 1) persons infected with *C. psittaci* may be only mildly symptomatic and not seek medical attention; 2) physicians may not elicit a history of bird exposure when evaluating patients because the diagnosis may not be suspected or because patients may not recall transient bird exposure; 3) convalescent-phase serum samples may not be obtained on patients who show clinical improvement on therapy; and 4) prompt initiation of appropriate antibiotic therapy may blunt the antibody response to *C. psittaci*, making convalescent serologies unreliable. Consequently, the extent of this multistate outbreak may have been greater than reported.

Psittacosis — Continued

Domestic and imported pet birds are at risk for infection with and transmission of *C. psittaci* to other birds and to humans because shipping, crowding, and breeding promote shedding of the organism. Avian infection, which has a prevalence of less than 5%, may increase to 100% under such circumstances (National Association of State Public Health Veterinarians, unpublished data, 1992). There are no federal regulations that require CTC treatment/prophylaxis by domestic breeders, although states may promulgate such regulations. However, USDA requires a 30-day quarantine period for all imported birds to prevent the introduction of velogenic viscerotropic Newcastle disease; during this period, psittacine birds receive medicated feed containing at least 1% CTC with not more than 0.7% calcium to prevent transmission of *C. psittaci* to USDA staff (*3*). Unless treatment is continued for 45 days, infected birds arriving to distributors from breeders and from quarantine may shed *C. psittaci* and continue to do so after purchase by consumers (*4,5*). Therefore, breeders and importers should ensure that all domestic nestlings and imported birds receive prophylactic CTC for 45 continuous days to prevent future outbreaks of human psittacosis.

Administration of antibiotics through drinking water is ineffective because resulting serum concentrations of CTC are insufficient for elimination of the organism (*2*). Birds that do not eat CTC-impregnated feed can be given daily intramuscular injections of tetracycline hydrochloride.

Suspected cases of human psittacosis require investigation to confirm the diagnosis and establish the presence of avian infection. If the bird was purchased during the preceding 2 months, the retailer should be identified and active surveillance conducted for additional cases in owners of birds recently purchased from the retailer. Birds in pet stores associated with an infected bird should be evaluated for infection with *C. psittaci* by cloacal swabs on three consecutive days; birds diagnosed with *C. psittaci* infection should be traced to the respective distributors and breeders or importers. All birds in a retail store associated with an infected bird should be treated with CTC for 45 days. Distributor's stocks, breeder's flocks, and importer's lots supplying birds known to be infected in a retail store should be evaluated for *C. psittaci* infection and, if present, appropriate treatment given to groups of birds exposed to any infected birds. For accurate identification of owners and suppliers of infected birds, retailers and suppliers should maintain records identifying the origin and destination of birds. Separating birds by source and shipment date will facilitate accurate recordkeeping and may diminish the likelihood of disease transmission among birds at retailer and supplier facilities.

Forms used for surveillance conducted by CDC are being modified to include data that will assist in identifying outbreaks associated with a common source. Cases and suspected outbreaks of psittacosis should be reported promptly through local and state health departments to the Respiratory Diseases Branch, Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, CDC.

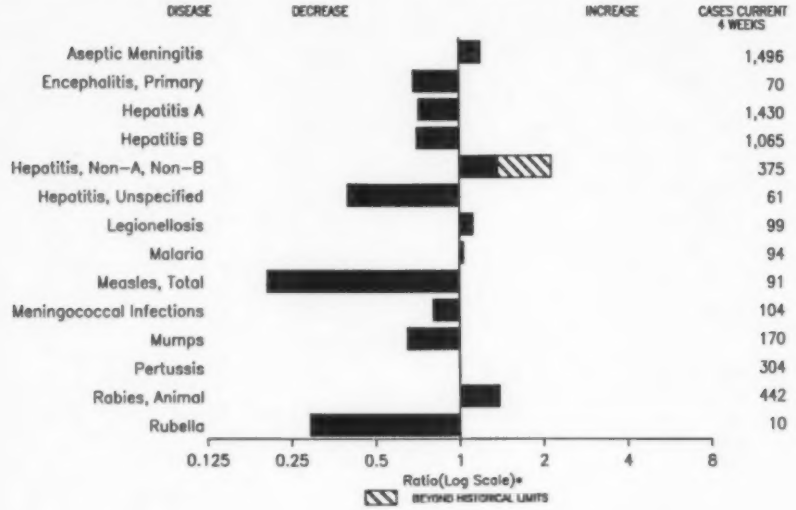
References

1. Chorba TL, Berkelman RL, Safford SK, Gibbs NP, Hull HF. Mandatory reporting of infectious diseases by clinicians. JAMA 1989;262:3018–26.
2. CDC. Summary of notifiable diseases, United States, 1990. MMWR 1991;39(no. 53):55.

Psittacosis – Continued

3. Animal and Plant Health Inspection Service, US Department of Agriculture. 9 Code of Federal Registry (1-1- 92 Edition) §92.106
4. Arnstein P, Eddie B, Meyer KF. Control of psittacosis by group chemotherapy of infected parrots. Am J Vet Res 1968;29:2213–27.
5. CDC. Psittacosis surveillance, 1975–84. Atlanta: US Department of Health and Human Services, Public Health Service, CDC, 1987.

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending October 17, 1992, with historical data — United States



*Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending October 17, 1992 (42nd Week)

	Cum. 1992		Cum. 1992
AIDS*	35,339	Measles: imported	119
Anthrax	1	indigenous	1,984
Botulism: Foodborne	13	Plague	9
Infant	43	Poliomyelitis, Paralytic†	-
Other	1	Psittacosis	74
Brucellosis	57	Rabies, human	-
Cholera	97	Syphilis, primary & secondary	27,164
Congenital rubella syndrome	8	Syphilis, congenital, age < 1 year§	697
Diphtheria	4	Tetanus	23
Encephalitis, post-infectious	97	Toxic shock syndrome	193
Gonorrhea	389,854	Trichinosis	23
Haemophilus influenzae (invasive disease)	1,044	Tuberculosis	17,901
Hansen Disease	128	Tularemia	137
Leptospirosis	29	Typhoid fever	305
Lyme Disease	6,123	Typhus fever, tickborne (RMSF)	391

*Updated monthly; last update October 3, 1992.
†Two cases of suspected poliomyelitis have been reported in 1992; 6 of the 9 suspected cases with onset in 1991 were confirmed, and 5 of the 8 suspected cases with onset in 1990 were confirmed; all were vaccine associated.
§Reports through first quarter 1992.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending October 17, 1992, and October 19, 1991 (42nd Week)

Reporting Area	AIDS*	Aseptic Meningitis	Encephalitis		Gonorrhea		Hepatitis (Viral), by type				Legionellosis	Lyme Disease
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1991	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992
UNITED STATES	35,339	8,339	536	97	389,854	481,175	16,425	12,565	5,733	584	1,039	6,123
NEW ENGLAND	1,118	324	22	-	8,254	11,571	478	473	90	20	43	1,330
Maine	36	35	3	-	76	127	28	19	6	-	2	4
N.H.	34	23	2	-	92	165	31	32	20	1	5	34
Vt.	23	18	4	-	23	45	10	12	11	-	2	5
Mass.	552	137	10	-	2,999	5,045	239	379	47	19	24	193
R.I.	74	111	3	-	557	1,022	119	18	6	-	10	246
Conn.	399	-	-	-	4,507	5,167	51	13	-	-	-	848
MID. ATLANTIC	9,276	694	21	7	43,050	56,848	1,232	1,551	277	18	274	3,515
Upstate N.Y.	1,180	355	-	-	8,368	10,468	272	400	177	8	104	2,154
N.Y. City	5,421	120	4	1	15,302	21,514	558	298	4	-	6	15
N.J.	1,603	-	-	-	5,709	9,505	187	376	67	-	27	504
Pa.	1,072	219	17	6	13,671	15,361	215	477	29	10	137	842
E.N. CENTRAL	3,106	1,348	135	27	74,534	89,182	2,304	1,896	1,140	34	279	124
Ohio	558	383	43	2	22,338	27,518	358	191	74	4	127	50
Ind.	294	170	11	11	7,375	9,047	680	642	551	13	37	30
Ill.	1,481	331	57	6	24,484	26,971	482	228	78	6	24	17
Mich.	582	437	22	8	17,223	19,420	122	484	368	11	62	27
Wis.	191	27	2	-	3,114	6,226	662	351	69	-	29	-
W.N. CENTRAL	983	456	35	6	18,579	23,886	2,147	528	234	30	65	280
Minn.	187	67	14	-	2,399	2,533	608	58	16	2	6	131
Iowa	74	71	-	3	1,287	1,574	42	30	5	4	16	26
Mo.	502	199	8	-	10,650	14,624	858	350	181	22	23	95
N. Dak.	8	1	3	-	52	67	97	1	4	1	2	1
S. Dak.	7	8	1	1	148	295	196	4	-	-	-	1
Nebr.	46	26	4	2	8	1,474	225	32	15	1	15	9
Kans.	159	84	5	-	4,035	3,319	121	53	13	-	3	17
S. ATLANTIC	7,993	1,286	139	43	118,042	143,700	1,045	2,074	781	94	155	515
Del.	102	48	6	-	1,432	2,372	49	180	167	1	22	183
Md.	990	166	13	-	12,823	15,854	188	323	30	7	29	140
D.C.	538	23	1	-	4,787	7,456	13	68	284	-	10	2
Va.	472	209	31	12	13,207	14,591	95	154	31	32	18	94
W. Va.	42	32	61	-	694	1,015	7	46	2	24	-	8
N.C.	534	133	23	-	19,365	29,159	91	350	72	-	31	59
S.C.	258	23	-	-	8,878	11,966	21	45	1	1	16	2
Ga.	1,036	171	2	-	34,159	32,250	154	248	98	-	7	3
Fla.	4,021	481	2	31	22,697	29,037	427	659	118	29	22	24
E.S. CENTRAL	1,108	424	21	-	39,079	47,807	259	1,076	1,614	2	52	56
Ky.	174	148	13	-	3,874	4,899	84	79	3	-	24	19
Tenn.	354	98	4	-	11,797	16,802	97	887	1,595	-	22	28
Ala.	391	110	3	-	13,969	14,476	44	106	15	1	6	9
Miss.	189	70	1	-	9,439	11,630	34	4	1	1	-	-
W.S. CENTRAL	3,264	997	48	5	42,854	54,370	1,613	1,529	129	134	20	100
Ark.	200	11	7	-	5,871	6,359	102	71	8	4	-	14
La.	568	55	5	1	11,941	12,556	178	149	63	3	4	5
Okla.	191	-	3	2	4,450	5,720	155	162	33	3	9	23
Tex.	2,305	931	33	2	20,592	29,735	1,178	1,147	25	124	7	58
MOUNTAIN	1,017	293	28	5	9,810	9,916	2,323	593	227	49	80	15
Mont.	17	9	1	1	91	79	81	32	27	1	9	-
Idaho	22	22	-	-	93	125	73	70	-	1	4	2
Wyo.	2	4	2	-	46	81	9	8	42	-	1	5
Colo.	322	96	10	1	3,453	2,796	656	92	78	21	17	-
N. Mex.	75	35	4	1	758	828	256	163	20	8	2	2
Ariz.	320	73	6	1	3,459	3,680	906	133	22	12	26	-
Utah	96	13	3	1	278	256	259	13	25	6	1	6
Nev.	163	41	2	-	1,632	2,071	83	82	13	-	20	-
PACIFIC	7,474	2,517	87	4	35,652	43,895	5,024	2,845	1,241	203	71	188
Wash.	429	-	1	-	2,977	3,794	643	287	127	8	10	13
Oreg.	235	-	-	-	1,335	1,634	349	227	60	9	1	-
Calif.	6,676	2,432	80	3	30,367	37,152	3,829	2,301	862	176	59	174
Alaska	13	14	6	-	554	708	57	15	4	1	-	-
Hawaii	121	71	-	1	419	607	146	15	188	9	1	1
Guam	-	2	-	-	50	12	5	1	-	6	-	1
P.R.	1,349	151	1	-	192	457	38	361	162	17	1	-
V.I.	9	-	-	-	85	309	4	6	-	-	-	-
Amer. Samoa	-	-	-	-	38	46	1	1	-	-	-	-
C.N.M.I.	-	-	-	-	62	75	2	-	-	-	-	-

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly; last update October 3, 1992.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending October 17, 1992, and October 19, 1991 (42nd Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1992	1992	Cum. 1992	1992	Cum. 1992	Cum. 1991	Cum. 1992	1992	Cum. 1992	1992	Cum. 1992	Cum. 1991	1992	Cum. 1992	Cum. 1991
UNITED STATES	768	6	1,984	1	119	8,880	1,762	35	2,048	70	2,049	2,216	4	146	1,291
NEW ENGLAND	41	-	58	-	13	84	110	-	18	5	189	249	-	6	4
Maine	1	-	-	-	4	7	9	-	-	-	11	53	-	1	-
N.H.	3	-	15	-	-	-	5	-	3	-	43	18	-	-	1
Vt.	-	-	-	-	-	5	5	-	1	-	8	4	-	-	-
Mass.	22	-	16	-	5	37	41	-	3	4	89	148	-	-	2
R.I.	5	-	23	-	-	4	12	-	1	1	3	-	-	4	-
Conn.	10	-	2	-	4	31	38	-	8	-	35	26	-	1	1
MID. ATLANTIC	197	5	178	-	15	4,619	199	6	147	21	208	208	1	17	565
Upstate N.Y.	30	-	81	-	5	401	97	2	59	8	88	116	-	11	539
N.Y. City	117	-	42	-	8	1,725	19	-	12	-	9	27	-	-	2
N.J.	25	5	50	-	1	1,033	25	3	12	12	28	15	1	3	2
Pa.	25	-	5	-	1	1,460	58	1	64	1	83	50	-	3	22
E.N. CENTRAL	49	-	40	-	14	87	270	6	272	10	296	382	-	8	320
Ohio	9	-	-	-	6	3	66	4	97	10	73	92	-	-	283
Ind.	11	-	20	-	-	6	43	-	9	-	31	69	-	-	3
Ill.	14	-	9	-	4	26	70	-	84	-	27	69	-	8	8
Mich.	12	-	11	-	2	43	72	2	70	-	9	37	-	-	25
Wis.	3	-	-	-	2	9	19	-	12	-	156	115	-	-	1
W.N. CENTRAL	36	-	6	-	8	59	85	1	65	-	166	181	-	7	18
Minn.	16	-	5	-	5	27	13	-	19	-	32	75	-	-	6
Iowa	2	-	-	-	3	17	8	-	10	-	5	20	-	3	6
Mo.	11	-	-	-	-	1	31	1	28	-	85	60	-	-	5
N. Dak.	1	-	-	-	-	-	1	-	2	-	14	3	-	-	1
S. Dak.	1	-	-	-	-	-	1	-	-	-	14	4	-	-	-
Nebr.	1	-	-	-	-	1	15	-	4	-	13	9	-	-	-
Kans.	4	-	1	-	-	13	16	-	2	-	23	10	-	4	-
S. ATLANTIC	157	-	123	-	12	499	355	4	740	5	142	212	-	20	8
Del.	5	-	3	-	-	21	2	-	8	-	7	-	-	-	-
Md.	48	-	10	-	7	176	31	1	67	2	25	49	-	6	1
D.C.	10	-	-	-	-	-	3	-	5	-	1	1	-	1	1
Va.	34	-	11	-	4	30	49	-	49	-	10	20	-	-	-
W. Va.	2	-	-	-	-	-	16	2	25	1	8	9	-	1	-
N.C.	11	-	25	-	-	44	104	-	192	-	38	34	-	-	2
S.C.	1	-	29	-	-	13	22	-	51	-	10	13	-	7	-
Ga.	5	-	2	-	1	15	46	-	70	-	14	42	-	-	-
Fla.	41	-	43	-	-	200	82	1	273	2	31	44	-	5	4
E.S. CENTRAL	18	-	448	-	18	8	115	-	57	2	29	84	-	1	100
Ky.	1	-	445	-	2	3	36	-	-	-	1	-	-	-	-
Tenn.	12	-	-	-	-	3	32	-	15	1	9	35	-	1	100
Ala.	4	-	-	-	-	2	36	-	13	1	16	45	-	-	-
Miss.	1	-	1	-	16	-	11	-	29	-	3	4	-	-	-
W.S. CENTRAL	27	-	1,007	-	5	199	128	12	351	2	55	135	-	-	7
Ark.	3	-	-	-	-	5	14	2	8	1	18	10	-	-	1
La.	1	-	-	-	-	-	26	-	21	1	9	16	-	-	-
Okla.	5	-	11	-	-	-	14	-	17	-	28	38	-	-	-
Tex.	18	-	996	-	5	194	74	10	305	-	-	71	-	-	6
MOUNTAIN	27	-	24	-	8	1,202	84	1	123	4	325	285	1	9	26
Mont.	-	-	-	-	-	-	14	-	2	-	7	4	-	-	-
Idaho	1	-	-	-	-	449	8	-	3	-	39	27	-	1	-
Wyo.	-	-	1	-	-	3	2	-	-	-	-	3	-	-	-
Colo.	7	-	20	-	7	7	17	-	19	-	38	120	1	2	3
N. Mex.	4	-	1	-	1	98	8	N	N	3	93	35	-	-	3
Ariz.	9	-	2	-	-	402	19	-	67	1	111	57	-	2	2
Utah	4	-	-	-	-	224	4	1	21	-	35	37	-	2	11
Nev.	2	-	-	-	-	19	12	-	11	-	2	2	-	2	7
PACIFIC	216	1	104	1	26	2,123	416	5	277	21	619	480	2	78	243
Wash.	16	-	-	1§	11	61	67	-	12	1	189	129	2	8	8
Oreg.	12	-	3	-	1	88	59	N	N	-	39	62	-	3	3
Calif.	178	1	59	-	3	1,940	276	3	241	20	361	217	-	44	221
Alaska	1	-	8	-	1	5	8	2	3	-	13	13	-	-	1
Hawaii	9	-	34	-	10	29	6	-	21	-	17	59	-	23	10
Guam	2	U	10	U	-	-	1	U	11	U	-	-	U	3	-
P.R.	-	72	411	-	-	94	3	-	1	-	11	53	-	-	1
V.I.	-	-	-	-	-	2	-	1	20	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	24	-	-	-	-	6	-	-	-	-
C.N.M.I.	-	U	1	U	1	-	-	U	-	U	1	-	U	-	-

*For measles only, imported cases include both out-of-state and international importations.
N: Not notifiable U: Unavailable † International § Out-of-state

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending October 17, 1992, and October 19, 1991 (42nd Week)

Reporting Area	Syphilis (Primary & Secondary)		Toxic-Shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1992	Cum. 1991	Cum. 1992	Cum. 1992	Cum. 1991	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992
UNITED STATES	27,164	33,851	193	17,901	18,170	137	305	391	6,585
NEW ENGLAND	528	838	14	412	516	1	28	7	677
Maine	2	1	1	19	30	-	-	-	-
N.H.	36	12	6	15	5	-	1	-	7
Vt.	1	2	-	6	8	-	-	-	21
Mass.	272	397	5	217	266	1	16	3	25
R.I.	24	44	2	42	75	-	-	2	-
Conn.	191	382	-	113	132	-	9	2	624
MID. ATLANTIC	3,906	5,756	23	4,000	4,209	-	81	35	2,053
Upstate N.Y.	265	540	9	326	359	-	11	15	1,188
N.Y. City	2,132	2,887	-	2,478	2,584	-	36	6	16
N.J.	445	1,000	-	702	700	-	21	4	560
Pa.	1,064	1,329	14	496	566	-	13	10	289
E.N. CENTRAL	4,123	4,149	50	1,821	1,808	1	35	28	137
Ohio	658	532	15	273	276	-	6	15	13
Ind.	250	153	11	151	180	-	1	6	19
Ill.	1,889	1,947	5	939	934	1	24	2	34
Mich.	772	1,020	19	397	333	-	3	2	15
Wis.	554	497	-	61	85	-	1	3	56
W.N. CENTRAL	1,155	679	34	407	425	55	6	30	935
Minn.	75	57	7	107	84	-	2	-	143
Iowa	38	60	6	32	55	-	1	3	153
Mo.	879	424	8	189	188	40	2	21	27
N. Dak.	1	1	2	6	6	-	-	-	134
S. Dak.	-	1	-	19	29	11	-	1	113
Nebr.	1	12	4	16	15	2	1	-	12
Kans.	161	124	7	38	48	2	-	5	353
S. ATLANTIC	7,349	9,967	22	3,401	3,463	5	27	117	1,474
Del.	168	142	3	42	28	-	-	12	175
Md.	528	801	2	298	308	1	5	14	445
D.C.	305	604	-	89	153	-	1	1	16
Va.	603	764	3	298	273	2	2	20	284
W. Va.	17	24	1	77	58	-	1	5	37
N.C.	1,868	1,606	3	441	447	1	-	48	37
S.C.	998	1,270	1	324	337	-	2	7	143
Ga.	1,459	2,453	5	698	702	1	-	7	295
Fla.	1,383	2,303	4	1,134	1,159	-	16	3	42
E.S. CENTRAL	3,450	3,756	3	1,129	1,161	9	3	60	160
Ky.	138	86	-	314	282	2	-	6	57
Tenn.	891	1,224	3	284	323	7	-	51	33
Ala.	1,220	1,415	-	326	312	-	-	3	69
Miss.	1,201	1,031	-	205	244	-	3	-	1
W.S. CENTRAL	4,920	5,955	2	2,129	2,173	35	14	98	598
Ark.	667	478	-	173	185	24	1	17	40
La.	2,080	2,203	-	155	175	-	1	-	8
Okla.	302	162	1	124	139	11	-	80	278
Tex.	1,891	3,112	1	1,677	1,674	-	12	1	272
MOUNTAIN	288	469	15	438	500	25	5	10	222
Mont.	7	6	1	-	6	12	-	3	21
Idaho	1	4	1	19	8	-	1	1	7
Wyo.	3	8	-	-	5	1	-	4	81
Colo.	45	71	6	30	69	4	2	-	24
N. Mex.	36	28	1	64	59	5	1	1	8
Ariz.	148	299	2	204	254	-	-	-	63
Utah	7	6	4	61	40	2	-	1	8
Nev.	41	49	-	60	59	1	1	-	12
PACIFIC	1,445	2,282	30	4,164	3,915	6	108	6	329
Wash.	71	157	-	246	238	2	8	-	-
Oreg.	39	69	1	106	101	-	1	3	2
Calif.	1,322	2,045	29	3,562	3,359	2	92	3	314
Alaska	5	4	-	43	56	2	-	-	13
Hawaii	8	7	-	207	161	-	7	-	-
Guam	3	1	-	58	6	-	3	-	-
P.R.	290	345	-	200	203	-	1	-	41
V.I.	56	87	-	3	2	-	-	-	-
Amer. Samoa	-	-	-	-	3	-	1	-	-
C.N.M.I.	6	5	-	50	18	-	1	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending October 17, 1992 (42nd Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	604	443	104	32	14	11	54
Boston, Mass.	170	101	43	12	6	8	23
Bridgeport, Conn.	49	42	3	1	3	-	2
Cambridge, Mass.	27	15	9	3	-	-	-
Fall River, Mass.	22	18	3	1	-	-	1
Hartford, Conn.	56	40	12	3	-	1	1
Lowell, Mass.	28	25	3	-	-	-	3
Lynn, Mass.	19	15	2	2	-	-	1
New Bedford, Mass.	24	18	3	2	1	-	2
New Haven, Conn.	36	29	5	1	2	1	4
Providence, R.I.	40	32	7	1	-	-	4
Somerville, Mass.	8	5	2	1	-	-	-
Springfield, Mass.	46	36	6	2	-	-	2
Waterbury, Conn.	28	25	2	-	1	-	4
Worcester, Mass.	49	40	4	3	1	1	7
MID. ATLANTIC	2,489	1,593	476	294	61	65	119
Albany, N.Y.	59	43	9	5	1	1	3
Allentown, Pa.	27	25	2	-	-	-	3
Buffalo, N.Y.	100	78	10	8	1	3	3
Camden, N.J.	33	18	4	7	1	3	2
Elizabeth, N.J.	23	16	4	3	-	-	-
Erie, Pa.§	41	34	3	2	1	1	2
Jersey City, N.J.	34	23	6	1	-	4	-
New York City, N.Y.	1,224	725	256	180	39	24	44
Newark, N.J.	73	28	24	14	3	4	4
Paterson, N.J.	19	17	1	1	-	-	-
Philadelphia, Pa.	402	254	82	47	7	12	22
Pittsburgh, Pa.§	83	60	18	1	2	2	5
Reading, Pa.	24	19	4	1	-	-	1
Rochester, N.Y.	147	110	23	7	3	4	15
Schenectady, N.Y.	26	18	8	-	-	-	2
Scranton, Pa.§	21	17	1	2	-	1	1
Syracuse, N.Y.	74	52	9	7	2	4	4
Trenton, N.J.	31	21	7	2	-	1	4
Utica, N.Y.	19	14	1	3	-	1	2
Yonkers, N.Y.	29	21	4	3	1	-	2
E.N. CENTRAL	1,940	1,213	386	196	92	53	91
Akron, Ohio	66	53	7	1	2	3	-
Canton, Ohio	24	21	2	-	1	-	3
Chicago, Ill.	425	193	92	82	46	12	3
Cincinnati, Ohio	96	62	16	10	5	3	6
Cleveland, Ohio	140	85	25	14	5	11	4
Columbus, Ohio	90	61	16	10	2	1	4
Dayton, Ohio	110	76	20	9	3	2	14
Detroit, Mich.	209	107	58	24	12	8	7
Evansville, Ind.	48	36	10	1	1	-	1
Fort Wayne, Ind.	60	44	14	1	1	-	-
Gary, Ind.	18	12	5	1	-	-	1
Grand Rapids, Mich.	42	33	8	-	1	-	6
Indianapolis, Ind.	175	109	43	15	5	3	18
Madison, Wis.	48	32	11	2	2	1	-
Milwaukee, Wis.	129	99	20	7	2	1	9
Peoria, Ill.	41	28	7	3	-	3	2
Rockford, Ill.	43	36	2	4	1	-	1
South Bend, Ind.	43	34	2	3	1	3	4
Toledo, Ohio	82	56	19	3	2	2	8
Youngstown, Ohio	51	36	9	6	-	-	-
W.N. CENTRAL	724	524	116	44	19	21	34
Des Moines, Iowa	72	50	15	4	1	2	6
Duluth, Minn.	29	23	4	1	-	1	-
Kansas City, Kans.	27	20	5	1	1	-	3
Kansas City, Mo.	107	77	18	5	2	5	5
Lincoln, Nebr.	37	32	4	1	-	-	3
Minneapolis, Minn.	151	110	26	8	4	3	10
Omaha, Nebr.	62	40	15	4	1	2	2
St. Louis, Mo.	137	92	18	14	6	7	2
St. Paul, Minn.	55	46	6	2	1	-	2
Wichita, Kans.	47	34	5	4	3	1	1
S. ATLANTIC	1,235	749	257	140	49	39	53
Atlanta, Ga.	144	73	39	19	6	7	2
Baltimore, Md.	140	80	30	23	7	-	16
Charlotte, N.C.	82	56	14	5	2	3	5
Jacksonville, Fla.	115	77	21	10	4	2	8
Miami, Fla.	158	89	44	19	4	2	1
Norfolk, Va.	48	29	3	4	3	9	1
Richmond, Va.	73	45	18	8	1	1	4
Savannah, Ga.	51	41	10	-	-	-	4
St. Petersburg, Fla.	68	55	4	5	3	1	-
Tampa, Fla.	125	89	24	12	-	-	9
Washington, D.C.	209	97	46	33	19	14	3
Wilmington, Del.	22	16	4	2	-	-	-
E.S. CENTRAL	687	423	145	59	37	23	36
Birmingham, Ala.	113	63	26	13	9	2	3
Chattanooga, Tenn.	42	27	10	5	-	-	2
Knoxville, Tenn.	68	45	17	4	2	-	3
Lexington, Ky.	58	33	12	7	3	3	6
Memphis, Tenn.	178	102	33	17	15	11	8
Mobile, Ala.	37	25	9	-	1	2	1
Montgomery, Ala.	47	31	9	4	1	2	1
Nashville, Tenn.	144	97	29	9	6	3	12
W.S. CENTRAL	1,260	763	262	132	53	47	68
Austin, Tex.	78	51	13	9	2	3	7
Baton Rouge, La.	37	29	4	3	1	-	5
Corpus Christi, Tex.	50	26	9	8	4	3	1
Dallas, Tex.	145	83	25	21	9	7	5
El Paso, Tex.	67	41	13	8	5	2	1
Ft. Worth, Tex.	83	44	18	8	5	8	2
Houston, Tex.	300	174	72	42	6	6	22
Little Rock, Ark.	62	44	11	3	1	3	9
New Orleans, La.	98	58	22	6	5	4	-
San Antonio, Tex.	180	114	39	14	9	4	8
Shreveport, La.	60	33	12	8	3	4	3
Tulsa, Okla.	100	66	24	4	3	3	5
MOUNTAIN	766	502	144	78	21	20	53
Albuquerque, N.M.	87	62	13	11	-	1	2
Colo. Springs, Colo.	36	23	6	9	-	-	2
Denver, Colo.	122	76	25	12	4	5	12
Las Vegas, Nev.	127	75	31	13	6	1	6
Ogden, Utah	28	18	5	2	1	2	2
Phoenix, Ariz.	140	88	25	17	3	7	11
Pueblo, Colo.	25	21	2	1	1	-	4
Salt Lake City, Utah	95	67	18	8	2	-	8
Tucson, Ariz.	104	72	19	5	4	4	6
PACIFIC	1,738	1,155	317	184	49	30	100
Berkeley, Calif.	21	11	3	6	-	1	3
Fresno, Calif.	67	42	11	8	3	3	7
Glendale, Calif.	18	15	3	-	-	-	1
Honolulu, Hawaii	69	52	12	3	-	2	6
Long Beach, Calif.	76	53	9	8	3	3	6
Los Angeles, Calif.	427	258	85	53	24	4	20
Pasadena, Calif.	24	15	6	1	1	1	1
Portland, Oreg.	161	115	29	13	2	2	4
Sacramento, Calif.	112	81	15	11	2	3	9
San Diego, Calif.	152	106	26	16	3	1	15
San Francisco, Calif.	146	80	31	30	2	3	-
San Jose, Calif.	161	120	28	10	1	2	13
Santa Cruz, Calif.	27	23	3	-	-	1	5
Seattle, Wash.	138	85	32	13	6	2	2
Spokane, Wash.	55	38	11	5	1	-	5
Tacoma, Wash.	84	61	13	7	1	2	3
TOTAL	11,443¶	7,385	2,207	1,159	395	309	608

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

†Pneumonia and influenza.

§Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶Total includes unknown ages.

U: Unavailable.

FIGURE II. Acquired immunodeficiency syndrome cases, by 4-week period of report — United States, 1984–1992

*Change in case definition
†Change to reflect Notice to Readers Vol. 41, No. 18, p. 325.

FIGURE III. Tuberculosis cases, by 4-week period of report — United States, 1984–1992

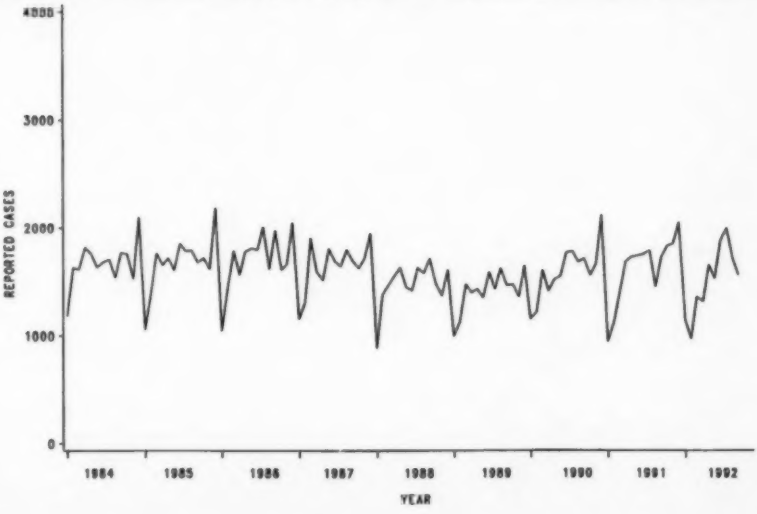
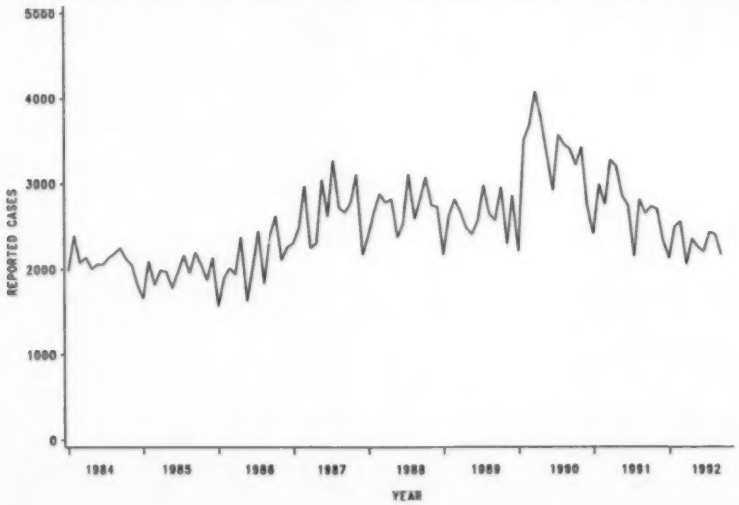


FIGURE IV. Gonorrhea cases, by 4-week period of report — United States, 1984–1992

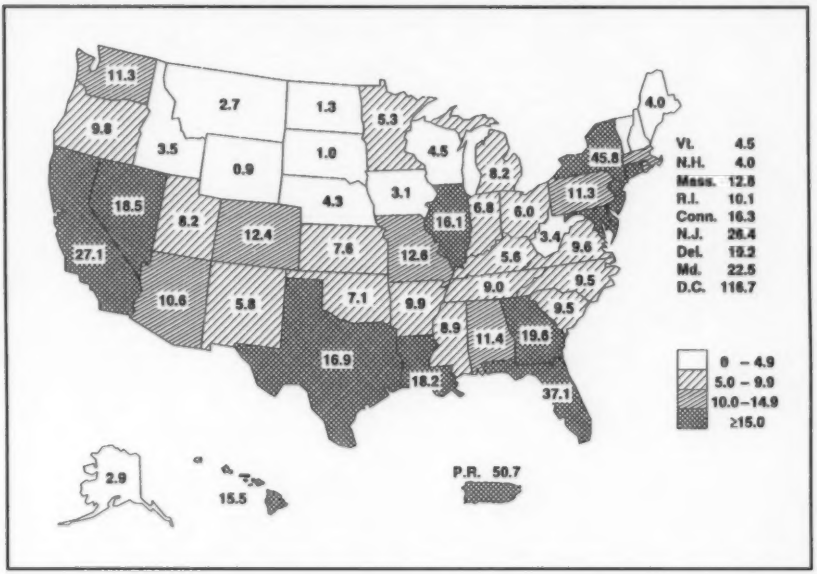
FIGURE V. Syphilis cases, by 4-week period of report — United States, 1984–1992



Quarterly AIDS Map

The following map provides information on the reported number of acquired immunodeficiency syndrome (AIDS) cases per 100,000 population by state of residence for October 1991 through September 1992. The map appears quarterly in *MMWR*. More detailed information on AIDS cases is provided in the quarterly *HIV/AIDS Surveillance Report*, single copies of which are available free from the CDC National AIDS Clearinghouse, P.O. Box 6003, Rockville, MD 20849-6003; telephone (800) 458-5231.

AIDS cases per 100,000 population — United States, October 1991–September 1992



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